

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph no. [0030] with the following amended paragraph:

[0030] The number of graphite particles having W-containing carbide substantially in their boundaries with the matrix is preferably 75% or more of the total number of graphite particles. Also, the number of W-containing carbide particles substantially in boundaries of graphite particles and the matrix (represented by the number of W-containing carbide particles on the graphite particles exposed by etching) is preferably $3 \times 10^5/\text{mm}^2$ or more per a unit area of graphite. Further, the area ratio of W-containing carbide (determined with respect to W-containing carbide on the graphite particles exposed by etching) is preferably 1.8% or more per a unit area of graphite. The area ratio of W-containing carbide is more preferably 2% or more.

How to calculate the number and area ratio of carbide particles will be explained later.

Please replace the paragraph no. [0063] with the following amended paragraph:

[0063] As shown in Fig. 1, the heat-resistant cast iron of the present invention has intermediate layers 12, in which W and Si are concentrated, in the boundaries of graphite particles 11 and the matrix 13. The intermediate layers 12 act as protective layers (barriers) to prevent the oxidizing gas from intruding into the graphite particles 11 and the diffusion of C from the graphite particles 11, thereby improving the oxidation resistance and thus thermal crack resistance of the heat-resistant cast iron. The intermediate layers 12, in which W and Si are concentrated, are formed during a solidification process in the casting, though it is considered that they are also formed in a heat treatment step and/or during use at high temperatures. W and Si are presumably ~~formed~~ concentrated in the intermediate layers 12 in the boundaries of the

graphite particles 11 and the matrix 13, because of stability in energy, resulting in the intermediate layers 12 formed in the boundaries of the graphite particles 11 and the matrix 13.

Please replace the paragraph no. [0068] with the following amended paragraph:

[0068] W is concentrated in eutectic cell boundaries to form W-containing carbide particles, thereby increasing the high-temperature yield strength of the heat-resistant cast iron. Also, W lowers the eutectic temperature, thereby improving the melt fluidity (castability) of the cast iron, and ~~lowers the melting temperature of the cast iron, thereby~~ decreasing a melting cost.

Please replace the paragraph no. [0072] with the following amended paragraph:

[0072] The heat-resistant cast iron of the present invention should contain 1.2-15% by weight of W. W is concentrated in the boundaries of graphite particles and the matrix to form intermediate layers. It further forms W-containing carbide particles in the boundaries of graphite particles and the matrix. The intermediate layers and the W-containing carbide particles prevent the intrusion of oxidizing gases into the graphite particles and the diffusion of C from the graphite particles, thereby preventing the oxidation of the graphite particles and their surrounding matrix regions to effectively improve oxidation resistance and thus thermal crack resistance. Although it is considered that the diffusion of C occurs predominantly in grain boundaries, it is effectively suppressed by the W-containing carbide particles formed in boundaries in contact with the graphite particles. The W-concentrated intermediate layers are presumably formed during the solidification process in the casting, a heat treatment step and/or high-temperature use. W is ~~formed~~ concentrated in graphite-matrix boundaries because of stability in energy.

Please replace the paragraph no. [0078] with the following amended paragraph:

[0078] Si contributes to the crystallization of graphite in the casting, and functions to ferritize the matrix and elevate the A_{C1} transformation point. Further, when Si is contained, a dense oxide layer is easily formed on the cast iron placed in a high-temperature oxidizing gas, resulting in providing the cast iron with improved oxidation resistance. Si is concentrated in the intermediate layers in the graphite-matrix boundaries together with W, forming protective layers in the graphite-matrix boundaries by reaction with oxidizing gases intruding from outside. Thus, Si has an increased function to suppress the oxidation of graphite particles and their surrounding matrix regions, which is caused by oxidizing gases intruding into the graphite particles, and the diffusion of C from the graphite particles. The Si-concentrated intermediate layers appear to be formed during a solidification process in the casting, a heat treatment step and/or high-temperature use. Si is ~~formed~~ concentrated in the graphite-matrix boundaries because of stability in energy. To exhibit such function effectively, the Si content should be 3.5% or more by weight. However, when Si exceeds 5.6% by weight, the cast iron has extremely decreased toughness and ductility and deteriorated machinability. Accordingly, the Si content is 3.5-5.6% by weight, preferably 3.8-5.3% by weight, more preferably 4.0-5.0% by weight.

Please replace the paragraph no. [0146] with the following amended paragraph:

[0146] (1) Concentration distributions of elements in ~~and near~~ intermediate layers and their microstructures